

Application No. 10/646,722

Reply to Office Action

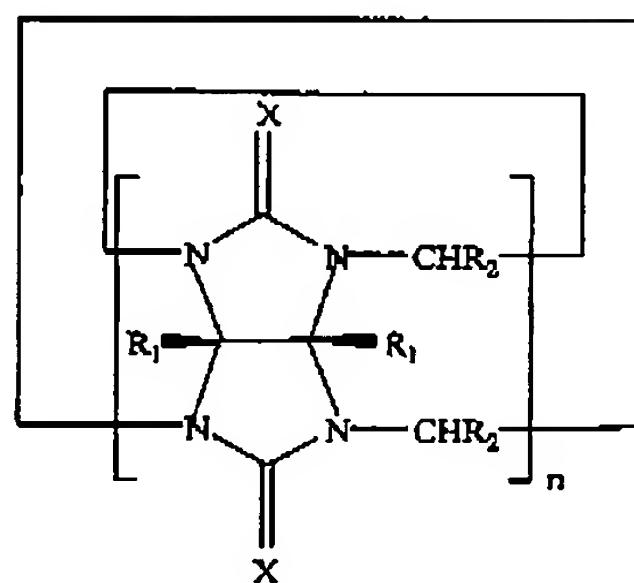
*AMENDMENTS TO THE CLAIMS*

This listing of claims replaces all prior versions, and listings, of claims in the application.

1-24. (Canceled).

25. (Currently Amended) A method of using cucurbituril derivatives in removing organic dyes from waste water, heavy metal from water and radioactive isotopes from radioactive wastes, ~~in capturing and removing unpleasant odor, and air pollutants including carbon monoxide, carbon dioxide, NO<sub>x</sub> and SO<sub>x</sub>, in manufacturing sensors for sensing ammonium ions, organic amines, amino acid derivatives, nucleic acid bases, alkali metal or alkaline earth metal ions, and in separating and purifying fullerene or carborane compounds, and as additives to polymers, cosmetics, artificially scented papers or textiles, pesticides, herbicides, and drugs, as drug carriers, as packing materials of chromatographic columns, as additive to gas separation membranes, as catalysts for various chemical reactions,~~

wherein the cucurbituril derivatives have the formula (1),



...(1)

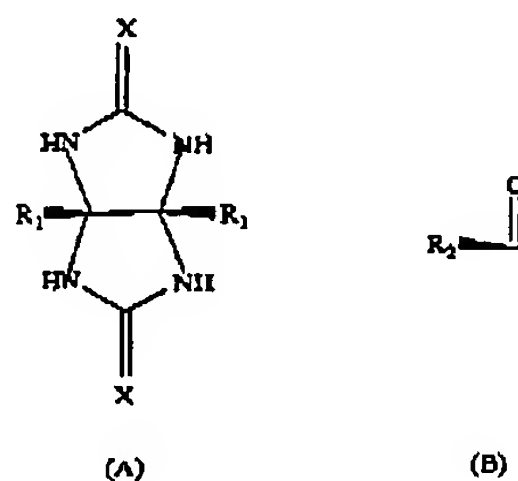
where X is O, S or NH; R1 and R2 are independently selected from the group consisting of hydrogen, alkyl groups of 1 to 30 carbon atoms, alkenyl groups of 2 to 30 carbon atoms, alkynyl groups of 2 to 30 carbon atoms, alkylthio groups of 1 to 30 carbon atoms, alkylcarboxyl groups of 2 to 30 carbon atoms, hydroxyalkyl groups of 1 to 30 carbon atoms, alkylsilyl groups of 1 to 30 carbon atoms, alkoxy groups of 1 to 30 carbon atoms, haloalkyl groups of 1 to 30 carbon atoms, nitro group, alkylamine groups of 1 to 30 carbon atoms, amine group, aminoalkyl groups of 1 to 30 carbon atoms, unsubstituted cycloalkyl

Application No. 10/646,722

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groups of 5 to 30 carbon atoms, cycloalkyl groups of 4 to 30 carbon atoms with hetero atoms, unsubstituted aryl groups of 6 to 30 carbon atoms, and aryl groups of 6 to 30 carbon atoms with hetero atoms; and n is an integer from 4 to 20, and

wherein the cucurbituril derivatives are prepared by,



(a1) adding 3 to 7 moles of an acid to 1 mole of compound (A) having the formula (A) to form a mixture, adding 2 to 20 moles of an aldehyde of formula (B) to the mixture, and stirring the mixture at 70 to 95°C; and

(b1) stirring the reaction product mixture at 95 to 105°C to complete the reaction.

26. (Previously Presented) The use of claim 25, wherein a mixture of cucurbituril derivatives is used.